

# PRODUCT DATA SHEET

# WS-688

## Flip-Chip Flux

### Introduction

**Flip-Chip Flux WS-688** is a NIA halogen-free water washable flip-chip dipping flux, which has an activator system powerful enough to promote wetting on the most demanding substrate metallizations. **WS-688** reduces or eliminates flip-chip voids, even in applications where damage to the solder bump, or traces of oxide on the solder bump or solder on pad, can generate voids in the final flip-chip joint.

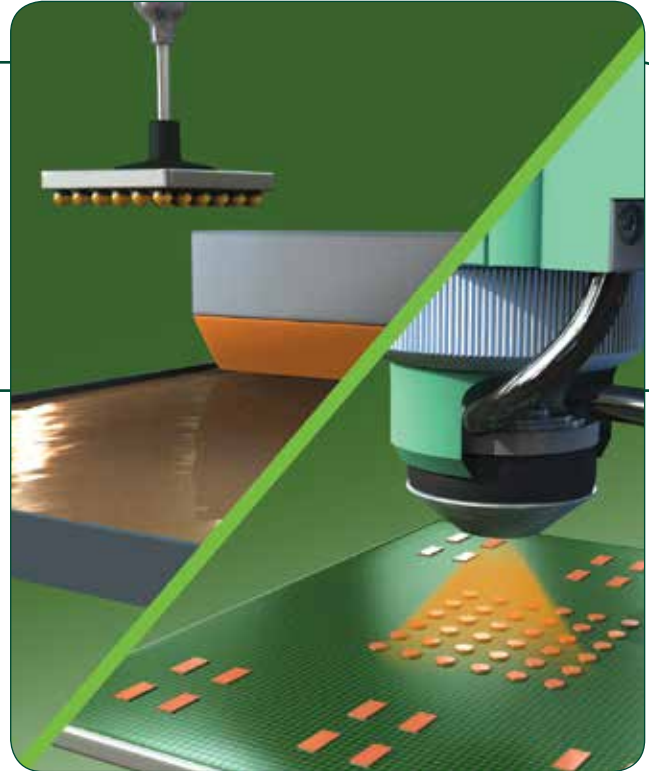
### Features

- Halogen-free – no intentionally added (NIA) halogens
- Designed for flip-chip dipping applications
- Suitable for both Sn63 and Pb-free applications
- Excellent solderability on a variety of metallizations
- Reduces flip-chip voids
- Uniform dipping performance over extended periods
- Tackiness suitable for holding large die during assembly
- Bubble-free packaging

### Properties

Property	Value	Test Method
Flux Classification	M0	J-STD-004 (IPC-TM-650: 2.3.32 and 2.3.33)
Typical Viscosity	9.3kcps	Brookfield HB DVII+-CP (5rpm)
SIR (Ohms, after cleaning)	Pass (>10 <sup>8</sup> after 7 days @ 85°C & 85% RH)	J-STD-004 (IPC-TM-650: 2.6.3.3 IPC-B-24)
Typical Acid Value	95mg KOH/g	Titration
Shelf Life	0 to 30°C for 6 months	Viscosity Change/ Microscope Examination

*All information is for reference only. Not to be used as incoming product specifications.*



### Application

**WS-688** is intended to be used in an air or nitrogen reflow environment of 50ppm oxygen or less. **WS-688** can be used on many surface finishes including immersion Ag, Cu, and Ni. These surfaces can be soldered with SnPb or Pb-free alloys.

Flux depth should be set to approximately 30-50% of the flip-chip solder bump height.

### Cleaning

**WS-688** residue can be cleaned with DI water, or water with an added cleaner. Ideal conditions for spray cleaning: 25°C (room temperature) or higher for >one minute at >60psi.

### Packaging

**WS-688** is available in 10cc and 30cc syringes.

**From One Engineer To Another®**



# Flip-Chip Flux WS-688

## Storage

For maximum shelf life, **WS-688** syringes and cartridges should be stored tip down. Storage temperatures should not exceed 30°C. After removing from cold storage, **WS-688** should be allowed to stand for at least four hours at room temperature before using.

## Technical Support

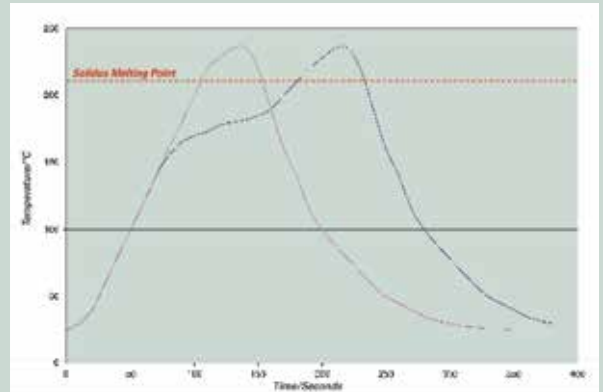
Indium Corporation sets the industry standard in providing rapid response, on-site technical support for our customers worldwide. Indium Corporation's team of Technical Support Engineers can provide expertise in all aspects of materials science and semiconductor packaging process applications.

## Safety Data Sheets

The SDS for this product can be found online at <http://www.indium.com/sds>

## Reflow

### Recommended Profile:



A short preheat (150°-160°C) for less than 45 seconds may be used to reduce voiding. The profile should ideally be a linear ramp at 1-2°C/second up to 20-30°C above solidus temperature, with a rapid cool down afterwards, and a minimum time above liquidus of 20 seconds.

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